GOVERNMENT ARTS AND SCIENCE COLLEGE – PAPPIREDDIPATTI

DEPARTMENT OF MATHEMATICS

NAAN MUDHALVAN ONLINE COURSE

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PROJECT NAME

Voyage Vista: Illuminating Insights from Uber Expeditionary Analysis

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VOYAGE VISTA: IIIUMINATING INSIGHTS FROM UBER EXPEDITIONARY ANALYSIS

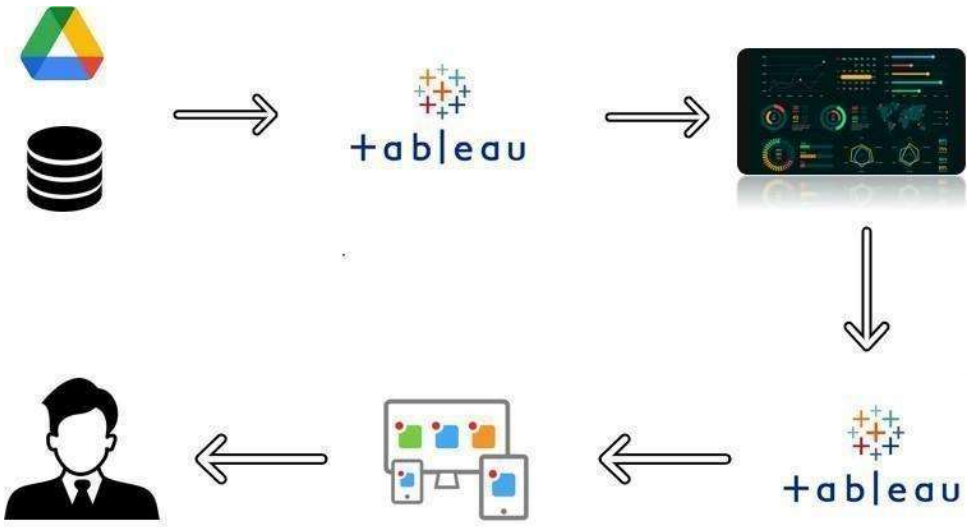
Project Based Experiential Learning Program

1.INTRODUCTION

1.1 OVERVIEW

Project Description

Uber Driver Analysis refers to the Analyzing the number of trips taken by Uber drivers can provide insights into their overall activity and the demand for rides in specific areas. Daily, Weekly, or Monthly Analysis: Uber's data can be analyzed on a daily, weekly, monthly basis to understand the trends and patterns of trip volumes. This analysis can help identify peak hours or days of high demand and optimize driver availability during those times. Trips can be analyzed based on geographic regions or specific cities to identify areas with higher demand. This analysis can help Uber drivers decide where to focus their driving efforts for maximum efficiency and profitability. The Major of our project is to use data Analyzing techniques to find unknown patterns in the Uber Drives dataset. The research is carried out on Uber drives data collected from the year 2016.



1.2 PURPOSE

Purpose of the Uber

Uber is a ride-sharing service that connects drivers with passengers through a mobile app. Its main purpose is to provide convenient and efficient transportation for people. Passengers can request rides using the app, and nearby drivers pick them up and take them to their destinations. Uber offers a more flexible and often cheaper alternative to traditional taxis. Additionally, Uber provides opportunities for individuals to earn money by driving their own vehicles and working as independent contractors for the platform.

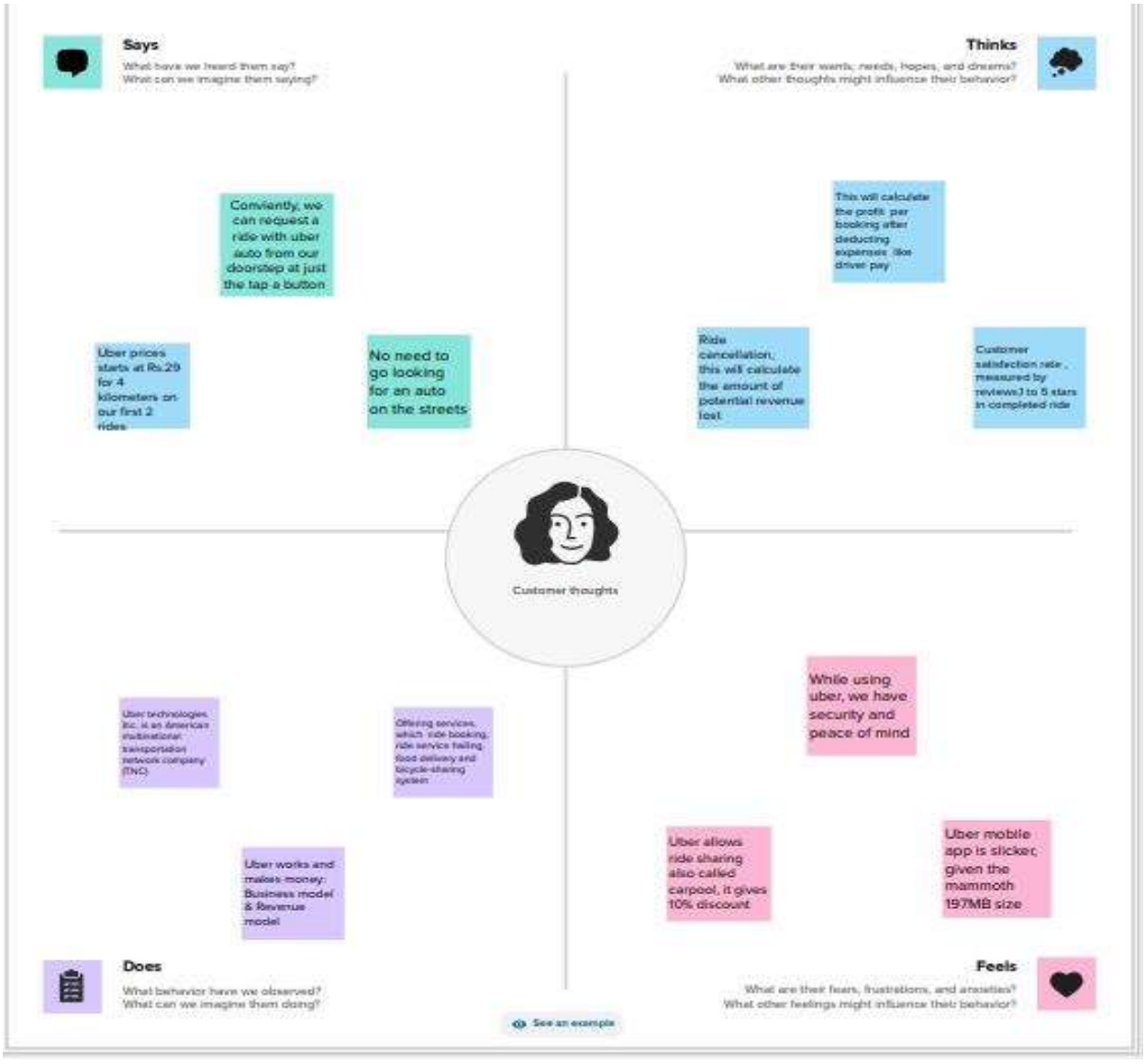
2.PROBLEM DEFINITION AND DESIGN THINKING

Problem Definition

Uber has faced regulatory challenges and legal battles in many cities and countries worldwide. Regulations regarding ride-sharing services can vary significantly, leading to legal complexities and barriers to entry in some regions. Ensuring the safety of both drivers and riders is a constant concern. Uber has had to deal with issues related to background checks, incidents during rides, and implementing safety measures to protect all parties involved. Uber faces intense competition from other ride-sharing services, traditional taxi companies, and emerging transportation technologies. Staying ahead in this competitive landscape is an ongoing challenge. Uber's relationship with its drivers has been a topic of concern. Issues such as fair pay, driver benefits, and the classification of drivers as independent contractors have led to tensions and legal disputes.

2.1 EMPATHY MAP

Empathy map specific to Uber can provide valuable insights into the thoughts, emotions, and behaviors of both riders and drivers. Here's an empathy map tailored to understand the experiences of both user groups.



2.2 IDEATION & BRAINSTORMING MAP

- **Central Theme:**
- Start with a central theme or problem statement written in the center of your map. It could be a specific challenge you're addressing or a goal you're trying to achieve.
- **Branches:**
- Create main branches radiating from the central theme. Label these branches with broad categories related to your theme. For example: "Features," "User Experience," "Marketing Strategies," "Cost Optimization," etc.
- **Sub-Branches:**
- From each main branch, create sub-branches representing specific aspects of the main category. For example, under "Features," you might have sub-branches like "New Product Ideas," "Improvements to Existing Features," etc.
- **Ideas and Concepts:**
- Under each sub-branch, jot down specific ideas, concepts, or solutions that pertain to that category. Encourage participants to think creatively and contribute as many ideas as possible. Use keywords, short phrases, or simple sketches to represent ideas.
- **Evaluation and Clustering:**
- After the brainstorming session, review the ideas. You can use different colors, shapes, or markers to indicate the level of priority or feasibility for each idea. Also, consider clustering related ideas together. This helps in identifying patterns and themes among the ideas.
- **Prioritization:**
- Use a different marker or visual cue to highlight the most promising or high-priority ideas. Consider factors like feasibility, impact, and alignment with the project goals.
- **Action Items:**
- Identify action items associated with high -priority ideas. What steps need to be taken to explore, develop, or implement these ideas? Assign responsible team members and deadlines for these actions.
- **Documentation:**
- Document the ideation and brainstorming map digitally or on a large board. Make sure to capture all the ideas, even the ones that weren't immediately deemed feasible. Sometimes, seemingly less viable ideas can inspire innovative solutions later on.


Brainstorm
& idea prioritization
Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.
Before you collaborate
Define your problem statement
Brainstorm
Group ideas
Prioritize
After you collaborate
Surge pricing is a key annoyance for most of the customers. It is a pricing method that involves increasing or decreasing prices as per the demand and supply of customers.
Top Cancellations sometimes due to unavailability of taxi or any other reasons, drivers cancel the trip. This causes disruptions to a plan of a passenger.
No advance booking. Hence difficult to book an Uber before important appointments, or catch a flight on time.
Expected time of arrival (ETA) can be too long wherever the fleet is relatively small.
ETA can be inaccurate, given traffic conditions.
Halts for chores can prove costly. Additions stops may result in higher fares.
You have to travel with people you do not know. No personal space.
Travelling with people you do not know is dangerous.
Multiple affiliations -Many drivers are affiliated to both ola and Uber.
Unethical Extra charges Drivers, especially at night demand extra cash apart from the fare computed by the app.
Increase weekly active riders and monthly active riders.
Increase rides planning by syncing google calendar and offer discount on favorited locations.
Increase rides planning by encouraging riders to sign up for Uber subscription packages and as a byproduct increase LTV per rides.
Importance
Feasibility


Increase weekly active riders and monthly active riders.
Increase rides planning by syncing google calendar and offer discount on favorited locations.
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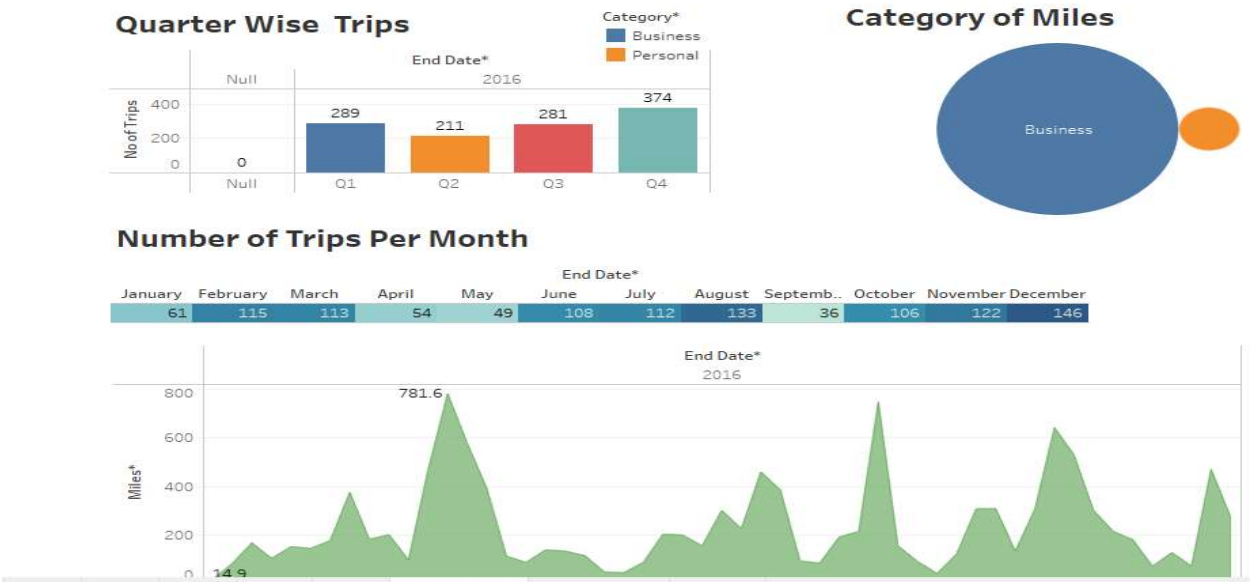
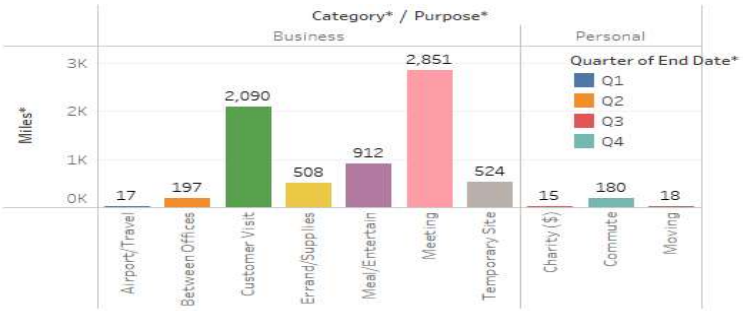
Increase rides planning by syncing google calendar and offer discount on favorited locations.
Increase ridership by encouraging riders to sign up for Uber subscription packages and as a byproduct increase LTV per rides.
Importance
Feasibility

1. RESULT

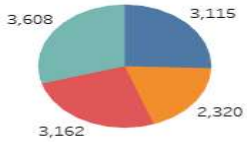
Final finding of the project

The typical machine learning project life cycle involves defining the problem, building a solution, and measuring the solution's impact on the business. However, before getting started with any machine learning project, it is essential to realize how prevalent the exercise of **exploratory data analysis (EDA)** is in any machine learning project. 80% of a data scientist's job is to explore and understand raw data, generate insights by cleaning, wrangling, and analyzing it, and determine whether you can employ machine learning for a given business use case. If the EDA is absent or insufficient, the team's knowledge of the data is incomplete. Without sufficient understanding of the data, calibration of analytical algorithms, ML models, or creating a compelling product or solution becomes extremely unreliable (if not inapplicable in the real world). It is clear how significant the manual study and analysis of data is for a data scientist and machine learning engineers, AI researchers, and data science students. The motivation, of course, extends to analysis of data from Uber rides as well – especially for Uber executives and consumers.

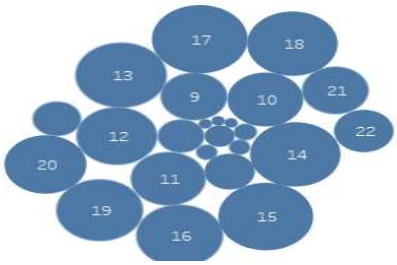




Quarter Wise Miles



Hour Wise Analysis

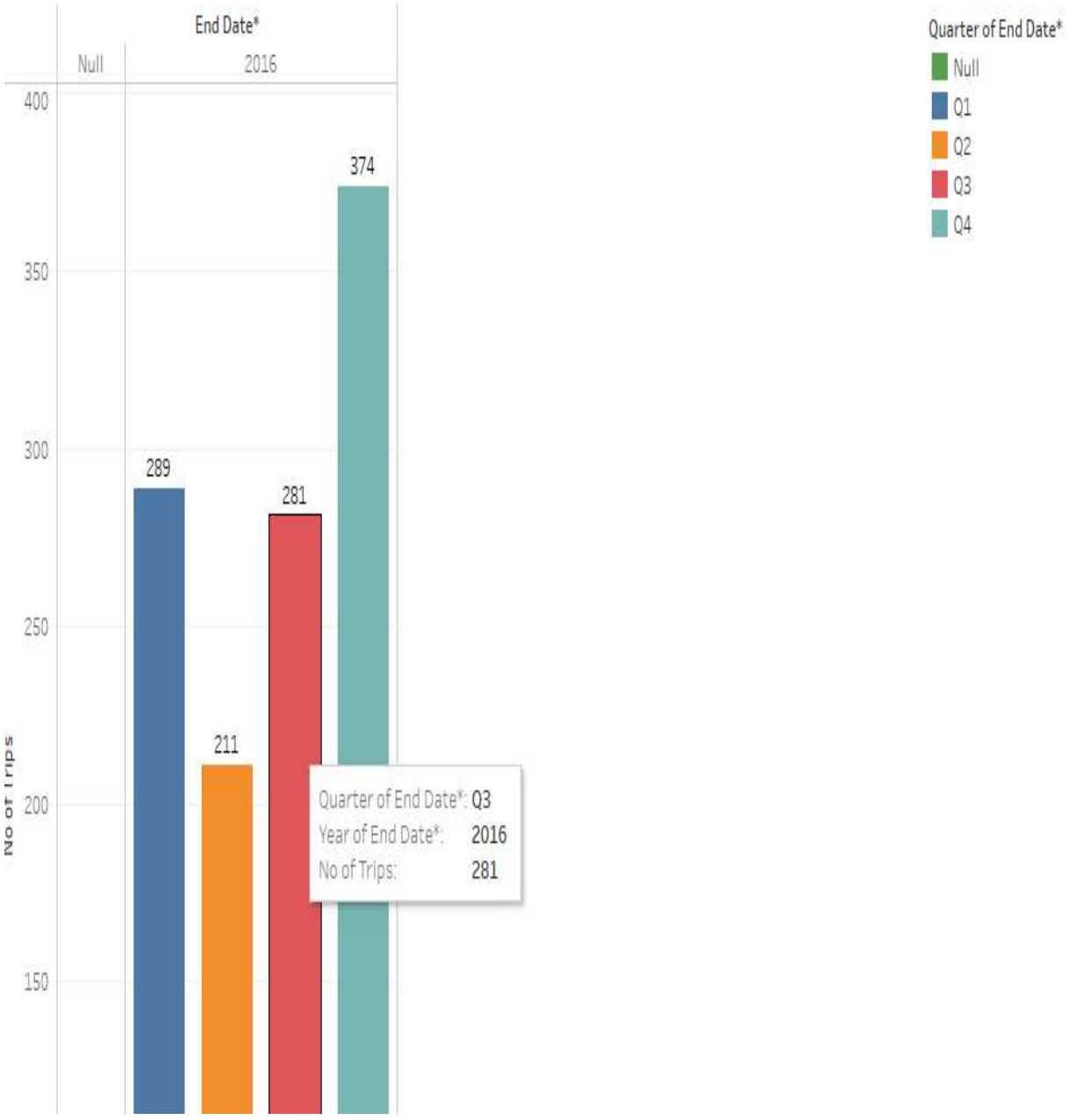


Month Wise Miles

In Q4, More Uber Trips has been took place.

In December More Number of Uber trips have been taken place.

Uber is busy from 3-7 pm



1. ADVANTAGES & DISADVANTAGES

Advantages of Uber

Uber through E-hail has hired drivers easily and fast. Proprietary software in the app locates drivers circling nearby cheapest carpooling luxury wheels. The price is fixed.

- **Convenient and Cashless**
- Instead of chasing a taxi on a street, or calling and waiting, app users can book a ride from any location, and it arrives in

minutes. Passenger’s credit or debit card is linked to the taxi app account, no cash changes hands.

- After the completion of the ride, A receipt is sent via email, and some links to options for rating and tipping the driver.

- **Professional Service**
- Drivers for Uber may use their own cars and bikes. Drivers get incentives to keep their taxis clean and well-maintained. The cheapest options for taxis are late-model compact cars and bikes.
- The riders need to insert their destinations into the app, and the drivers use the taxi app navigational features to reach the rider which is provided by the taxi app development company.

- The driver talks in a polite and well-spoken manner. Drivers don't get your destination details before picking you up. A driver with a low rating will force a driver out of Uber or its competitors.

- **Competitive Pricing**
- Uber is less expensive than other taxi services, but not always. Longer trips are always cheaper by Uber, the price model for Uber and other taxi apps can have higher booking prices due to busy times of the day.

- It is impossible to come up with a fixed price for an uber ride.
- It costing plans vary from one city to another and from one country to another.
- But uber always shows you the estimated fare before starting the ride.

- **Safer and Flexible**

- Safety is crucial for both passengers and drivers. This is what Uber is good at it. It is one of the major advantages of Uber.

- The riders are registered their identities and their payment channels. Cashless transactions also make it safer; a driver and rider don’t need to carry cash.

Disadvantages of Uber

Drivers are not assured of minimum pay to maintain their own vehicles. This topic is growing controversial in many cities because New York City mandated a $17.22 minimum wage for drivers.

- **Surge Pricing**
- “Surge pricing” or “rush time pricing” is not fixed in uber. It’s a free market principle of raising prices according to supply and demand.
- This means how many taxis are available (supply) and how many customers want to ride(demand).
- This automated system sometimes shows differences in pricing between any two same points.
- At peak times, the price could be double or more.

- Although this benefits uber by increasing the supply of drivers. Drivers can be motivated to earn at this time.

- **Low Fares Worry Drivers**

- Some Uber drivers say they struggle to earn minimum wage. Drivers pay the cost of fuel, maintenance, and repairs from their own pocket. With competition from other taxi apps, the earnings of drivers can be driven downward.
- This indicates that they need to work longer hours to earn a certain income.

- **Price Competition**

- Uber and other taxi-hailing companies are engaged in an intensive fight to provide the most affordable service.

They are competing with traditional taxi services for both customers and drivers. This has led to low earnings for taxi drivers.

5.APPILICATIONS

1. Download and Installation:

- Go to the Google Play Store (for Android devices) or the App Store (for iOS devices).
- Search for "Uber" in the search bar.
- Tap on the Uber app from the search results.
- Tap "Install" (or "Get" for iOS devices) to download and install the app on your device.
- Once the app is installed, open it.
- Sign up for an account using your email address and phone number.
- You'll need to provide your name, email address, phone number, and payment information.

3. Setting Up Your Ride:

- Open the app and enter your destination in the "Where to?" field.
- The app will automatically detect your current location using GPS. You can also manually enter your pickup location.
- Select the type of ride you want (UberX, Uber Black, Uber Pool, etc.) based on your preferences and budget.

4. Confirming Your Ride:

- After entering your destination and selecting your ride type, you'll see an upfront fare estimate and an estimated time of arrival.
- Confirm your ride request by tapping "Confirm" or a similar button on the app.
- You'll be able to track your driver's location and estimated time of arrival in real-time on the app.

5. Riding and Payment:

- Once your ride arrives, verify the driver and the vehicle (the app provides details of the vehicle and driver).

- Enjoy your ride to your destination.
- After the ride is complete, the fare will be automatically charged to the payment method you have on file. You'll receive an electronic receipt via email.

6. Rating and Feedback

- After the ride, you can rate your driver and provide feedback to Uber to help maintain service quality.

Additional Features

- **Scheduled Rides:** You can schedule a ride in advance using the app.
- **Split Fare:** You can split the fare with other Uber users if you're riding together.
- **Uber Eats:** Uber also offers a food delivery service called Uber Eats, which you can access through a separate app or within the Uber app (if available in your region).

6.CONCLUSION

Uber: Revolutionizing Transportation

Innovation and Convenience

Uber revolutionized the taxi industry by introducing a convenient and user-friendly mobile app that connects riders with drivers. This innovation made it easier and more efficient for people to find rides, reducing the hassle of traditional taxi services.

Ridesharing Worldwide

Uber expanded rapidly, becoming a global phenomenon available in numerous countries and cities. Its presence has provided millions of people with accessible and affordable transportation options, especially in areas with limited public transportation.

Economic Opportunities

Uber created economic opportunities for drivers, allowing many individuals to work flexibly and earn income using their own vehicles. This gig economy model has influenced other industries and platforms, changing the way people view work and self-employment.

Innovations Beyond Ridesharing

Beyond ride sharing, Uber diversified its services. Uber Eats, for instance, offers food delivery services, further expanding its impact on the service industry. Additionally, Uber has explored autonomous vehicle technology, contributing to the future of transportation.

Challenges and Controversies

Uber faced various challenges and

controversies, including regulatory issues, concerns about driver working conditions, and questions about safety and security. These challenges have led to debates about labor rights, safety standards, and the gig economy's overall impact.

Environmental Considerations

While Uber provides convenience, concerns have been raised about its environmental impact due to increased urban traffic. Efforts have been made to promote carpooling and invest in electric and autonomous vehicles to address these concerns.

Conclusion

In conclusion, Uber has undeniably reshaped the way people move around in urban areas globally. Its app-based platform, economic opportunities, and diversification into different services have made it a significant player in the modern economy. However, it continues to face challenges, requiring ongoing adaptation and responsiveness to the evolving needs and concerns of both riders and drivers. The story of Uber is not just a testament to technological innovation but also a reflection of the complexities and opportunities in the evolving world of transportation and the gig economy.

7.FURURE SCOPE

The future scope of Uber is broad and multifaceted, involving advancements in technology, sustainability, and global expansion. Here are several key areas where Uber is likely to focus its efforts in the future:

1. Autonomous Vehicles

Uber, like many other companies, is investing heavily in autonomous vehicle technology. The development of self-driving cars has the potential to significantly reduce operating costs, increase efficiency, and improve safety. Uber is likely to continue its research and development efforts in this area to eventually deploy autonomous ridesharing services.

2. Electric and Sustainable Transportation

With a growing emphasis on environmental sustainability, Uber is likely to expand its fleet of electric vehicles (EVs) and invest in charging infrastructure. Initiatives to promote electric and eco-friendly rides can reduce Uber's carbon footprint and contribute to a more sustainable future for urban transportation.

3. Diversification of Services

Uber will likely continue diversifying its services beyond ride sharing and food delivery. This might include partnerships with public transit agencies, integration with other modes

of transportation (such as bikes and scooters), and expansion into new areas of on-demand services.

4. Global Expansion

While Uber is already available in many countries, there are still regions with untapped potential. Expanding to new markets, especially in developing countries, can significantly increase Uber's user base and market share.

5. Data Utilization and AI

Uber collects vast amounts of data through its platform. Analyzing this data with artificial intelligence (AI) algorithms can lead to better route optimization, demand prediction, and enhanced user experiences. Machine learning can also improve safety features, such as detecting and preventing fraudulent activities and enhancing background checks for drivers.

6. Urban Air Mobility (UAM)

Uber is exploring the concept of urban air mobility, which involves using vertical takeoff and landing (VTOL) aircraft for short-distance air travel within cities. This futuristic approach could potentially alleviate urban congestion by taking transportation to the skies.

7. Regulatory Compliance and Public Relations

Addressing regulatory challenges and working closely with local governments will remain crucial. Building positive relationships with regulators and local communities is vital for Uber's sustainable growth and acceptance.

8. Partnerships and Collaborations

Uber is likely to forge more partnerships and collaborations with other companies, especially in areas like technology, vehicle manufacturing, and infrastructure development. These partnerships can accelerate innovation and help Uber stay at the forefront of the industry.

In summary, Uber's future scope is dynamic and multifaceted, ranging from technological innovations like autonomous vehicles and AI to sustainable transportation solutions and global expansion. Navigating regulatory landscapes and building strong, positive relationships with various stakeholders will be essential for Uber's continued success and growth in the future.

8.APPENDIX

Data set link

https://www.kaggle.com/code/mohamed08/exploratory-data-analysis-for-uber-trips/input